IP 66/67

NEMA 4X

Stratos *Pro*

2-Wire Process Analyzers with Great Flexibility

With an exceptional range of functions and application-oriented design, the Stratos device line is well established throughout the chemical industry, process and power plant engineering, and the pharmaceutical and biotechnology sectors.

With its superior quality and the diversity of its features, the Stratos Pro series is the reference in 2-wire technology for process analysis.

It supports conventional sensors as well as contactless, digital Memosens technology. Even in harsh environmental conditions and in hazardous locations, the Stratos Pro can be used to collect measured values for pH, ORP, conductivity (contacting and inductive), or oxygen in almost all process applications.

Multitalents with Bus Communication

The device versions equipped with established bus technologies can be optimally integrated in both new and existing control systems (PROFIBUS: PA profile 3.02 and FOUNDATION fieldbus: ITK 6.1.1).
The entire configuration is carried out directly at the device or with established engineering tools via Enhanced EDD or DTM. Compatibility and interoperability tests ensure that Stratos bus devices can be integrated into all common automation systems.
Information on current sensor wear and predictive maintenance (CIP/SIP) is communicated just as reliably as process data via the bus systems.

The devices are NAMUR NE 107-compliant and offer proactive diagnostic features.

Extensive Functionality

From its wireless service interface to complete HART communication, the Stratos Pro series offers a wide range of reliable functions. The devices can be used in multidrop operation and are certified for handheld and asset management systems from leading manufacturers. Unlike any other 2-wire device on the market, the Stratos Pro provides two digital control inputs and a second current output for an additional measured value. Special versions are available for temperature class T6.

Explosion Protection

The special circuit technology ensures low self heating and extreme reliability.
Stratos Pro is certified according to ATEX/IECEx, FM, NEPSI, KCs, INMETRO, TIIS. A special version with ATEX/IECEx approval is available with temperature class T6.

Shatterproof and Corrosion-Resistant Housing

The PBT housing for the Stratos Pro with IP 66/67 protection is reinforced and UV-protected; safe operation is guaranteed in the range -20 °C to +65 °C. This also applies to use in hazardous locations.

Easy Installation

Stratos Pro devices are suitable for wall, pipe, or panel mounting. The rear unit can be pre-assembled. The large terminal compartment makes all parts easily accessible.

Stratos Pro

Unique, Color-Coded User Interface

Stratos Pro is the first in this class of 2-wire devices to feature color-guided screen backlighting that requires minimal electrical power. To reduce operating errors, the high-contrast widescreen display uses six different colors to indicate operating states particularly clearly: Normal measuring mode is backlit in white, views in information mode light up in green, and the Diagnostics menu is turquoise. The orange HOLD mode, e.g., for calibrations, is visible from afar, as is the magenta used to visually highlight asset management messages for predictive diagnostics – such as maintenance required, preliminary alarm, and sensor wear. Alarm status is shown in bright red; a flashing red display indicates impermissible inputs or incorrect passcodes. Running plain text and self-explanatory pictograms facilitate intuitive operation.

White:
Measuring mode

Flashing red:
Alarm, error

Orange:
HOLD mode

Magenta:
Maintenance required

Turquoise:
Diagnostics

Green:
Info texts

Facts and Features

- 2-wire process analyzers for pH/ORP, conductivity, or oxygen
- For analog, digital, and Memosens sensors
- Automatic sensor identification
- Sensor diagnostics with wear indicator, remaining service life, CIP/SIP counter, and adaptive calibration timer
- High-contrast, widescreen display color backlighting
- Protective pane made of safety glass
- Intuitive use with easy-to-understand pictograms and running plain text line
- One analog input (4 ... 20 mA), e.g., for external pressure compensation
- Two current outputs
- Two parameter sets
- Two digital inputs
  – external HOLD activation
  – external parameter set selection
- Logbook (200 entries)
- HART communication
- Fieldbus communication (PROFIBUS PA or FOUNDATION Fieldbus)
- Device versions for use in temperature class T6
- Use in hazardous locations

3-Year
Warranty!

Stratos Pro A2 T4 Product Line

Device	Stratos Pro								–		–	
Type	2-wire / 4 ... 20 mA	A	2									
Communication	Analog (HART can be retrofitted by TAN)			0								
	Profibus PA			2								
	FOUNDATION fieldbus			3								
Version number	Version				1							
Approvals	General safety					N						
	ATEX/IECEx/FM/CSA Zone 2/Cl 1 Div 2					B						
	ATEX/IECEx/FM/CSA Zone 1/Cl 1 Div 1					X						
Measuring parameters	Memosens pH/ORP						MSPH					
	Memosens conductivity						MSCOND					
	Memosens inductive conductivity						MSCONDI					
	Memosens oxygen						MSOXY					
	pH / ORP value, analog						PH					
	Conductivity, analog						COND					
	Inductive conductivity, analog						CONDI					
	Dual conductivity, analog (A201N only)						CC					
	Oxygen, analog						OXY					
Options	Without 2nd current output											0
	With 2nd current output											1

Stratos Pro A2 T6 Product Line

Device	Stratos Pro								–		–		–	
Type	2-wire / 4 ... 20 mA	A	2								0	T6		
Communication	Analog (HART can be retrofitted by TAN)			0										
Version number	Version				1									
Approvals	ATEX IECEx Zone 1 T6					X								
Measuring parameters	Memosens pH/ORP						MSPH							
	Memosens conductivity						MSCOND							
	Memosens inductive conductivity						MSCONDI							
	Memosens oxygen						MSOXY							
	pH / ORP value, analog						PH							
	Conductivity, analog						COND							
	Inductive conductivity, analog						CONDI							
	Oxygen, analog						OXY							
Options	1 current output										0			

Stratos Pro – Accessories

Accessories

Mounting Kits	Order No.
Pipe-mount kit	ZU0274
Panel-mount kit	ZU0738
Protective hood	ZU0737

Add-On Functions (Software via TAN)	Order No.
HART (for retrofitting devices without digital communication)	SW-A001
Logbook	SW-A002
Extended logbook (Audit Trail)	SW-A003
Trace oxygen measurement	SW-A004
Current input and 2 digital inputs	SW-A005
ISM digital (for pH and oxygen measuring channels)	SW-A006
Operation with Pfaudler pH sensors	SW-A007

Analog Ex Measuring Modules (Zone 1)	Order No.
pH/ORP measuring module	MK-PH 015X
COND measuring module	MK-COND 025X
CONDI measuring module	MK-CONDI 035X
OXY measuring module	MK-OXY 045X / MK-OXY 046X

Analog Ex Measuring Modules (Zone 2)	Order No.
pH/ORP measuring module	MK-PH 015B
COND measuring module	MK-COND 025B
CONDI measuring module	MK-CONDI 035B
OXY measuring module	MK-OXY 045B / MK-OXY 046B

Analog Measuring Modules	Order No.
pH/ORP measuring module	MK-PH 015N
COND measuring module	MK-COND 025N
CONDI measuring module	MK-CONDI 035N
OXY measuring module	MK-OXY 046N
CC measuring module	MK-CC 065N

Repeater Power Supplies	Order No.
Repeater power supply for 90 ... 253 V AC	WG21A7
Repeater power supply for 90 ... 253 V AC, with HART transmission	WG21A7, opt. 470
Repeater power supply for 24 V AC/DC	WG21A7, opt. 336
Repeater power supply for 24 V AC/DC, with HART transmission	WG21A7, opt. 336, 470
Loop-powered supply with HART transmission	WG25A7
Repeater power supply, safe area, 24V DC, HART, output: 0/4 ... 20 mA, 0 ... 10 V	A20100F0

Test Sockets, Connectors, Cables	Length	Order No.
HART test socket, integrated in cable gland		ZU0287
VP8 connector		ZU0721
M12 socket, 8-pin		ZU0860
VP8 ST cable (both ends with VP socket)	3 m	ZU0710
	5 m	ZU0711
	10 m	ZU0712
Inspection certificate 3.1		ZU0268/analysis

Specifications	Stratos Pro – Basic Functions	
Inputs	Digital or analog sensor (depending on version)	
Current input (TAN)	Analog, 0/4 … 20 mA for external temperature signal	
HOLD input, digital	0 … 2 V (AC/DC) 10 … 30 V (AC/DC)	HOLD inactive HOLD active
CONTROL input, digital	Parameter set selection 0 … 2 V (AC/DC) 10 … 30 V (AC/DC)	 Parameter set A Parameter set B
	Flow	Pulse amplitude 10 … 30 V DC Pulse input for flow measurement 0 ... 100 pulses/s
	Display	00.00 … 99.99 l/h Message via 22 mA, alarm contact or limit contacts
Outputs		
Output 1, output 2	Current loops 4 … 20 mA, 22 mA on error message HART communication (TAN) on output 1 Supply voltage 14 … 30 V	
Communication		
HART communication (TAN)	HART version 6 Digital communication via FSK modulation of output current 1 Device identification, measured values, status and messages, parameter setting, calibration, logs	
Diagnostics/service		
Logbook (TAN)	100 events with date and time	
Extended logbook (TAN)	Audit Trail: 200 events with date and time	
Approvals		
Explosion Protection	See Ex Certificates and EU Declaration of Conformity or www.knick.de	
Device data		
Display	LC display with color backlighting, primary display, secondary display, plain text line, pictograms, Sensoface, status indicator, alarm indicator	
Keypad	Keys:	meas, menu, info, 4 cursor keys, enter
Power supply	See outputs 1/2	
Real-time clock	Different time and date formats selectable Power reserve > 5 days	
EMC	EN 61326-1 (General requirements) Emitted interference: Immunity to interference:	 Class A (industrial applications) Industrial applications EN 61326-2-3

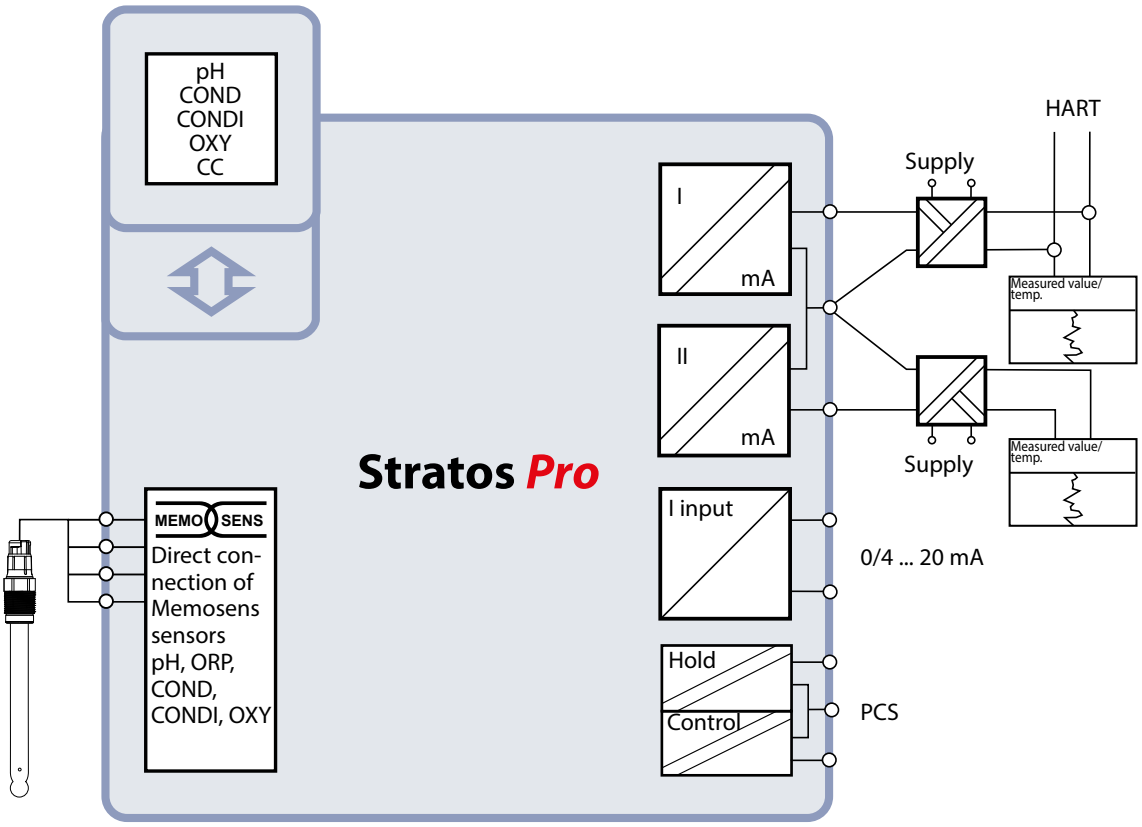
Stratos Pro

Specifications

Nominal operating conditions	Ambient temperature	-20 … 65 °C (-4 … 149 °F)
	For hazardous locations, T4	-20 … 65 °C (-4 … 149 °F)
	For hazardous locations, T6	-20 … 50 °C (-4 … 122 °F)
	For hazardous locations, dust	-20 … 65 °C (-4 … 149 °F)
	Transport / storage temperature	-20 … 70 °C (-4 … 158 °F)
	Relative humidity	10 … 95% not condensing
Housing	Molded enclosure made of PBT/PC, glass fiber reinforced	
Installation	– Wall mounting – Pipe mounting: – Panel mounting	Ø 40 … 60 mm, Ø 30 … 45 mm
Dimensions (mm)	H x W x D 148 x 148 x 117	
Cable glands	3 knockouts for M20 x 1.5 cable glands 2 knockouts for NPT ½“ or rigid metallic conduit	
Panel cutout	138 mm x 138 mm acc. to DIN 43700	
Degree of protection	IP 66/67/NEMA 4X	
Weight	Approx. 1.2 kg	(1.6 kg incl. accessories and packaging)
Connections	Terminals, max. conductor cross-section 2.5 mm²	

*) Adjustable

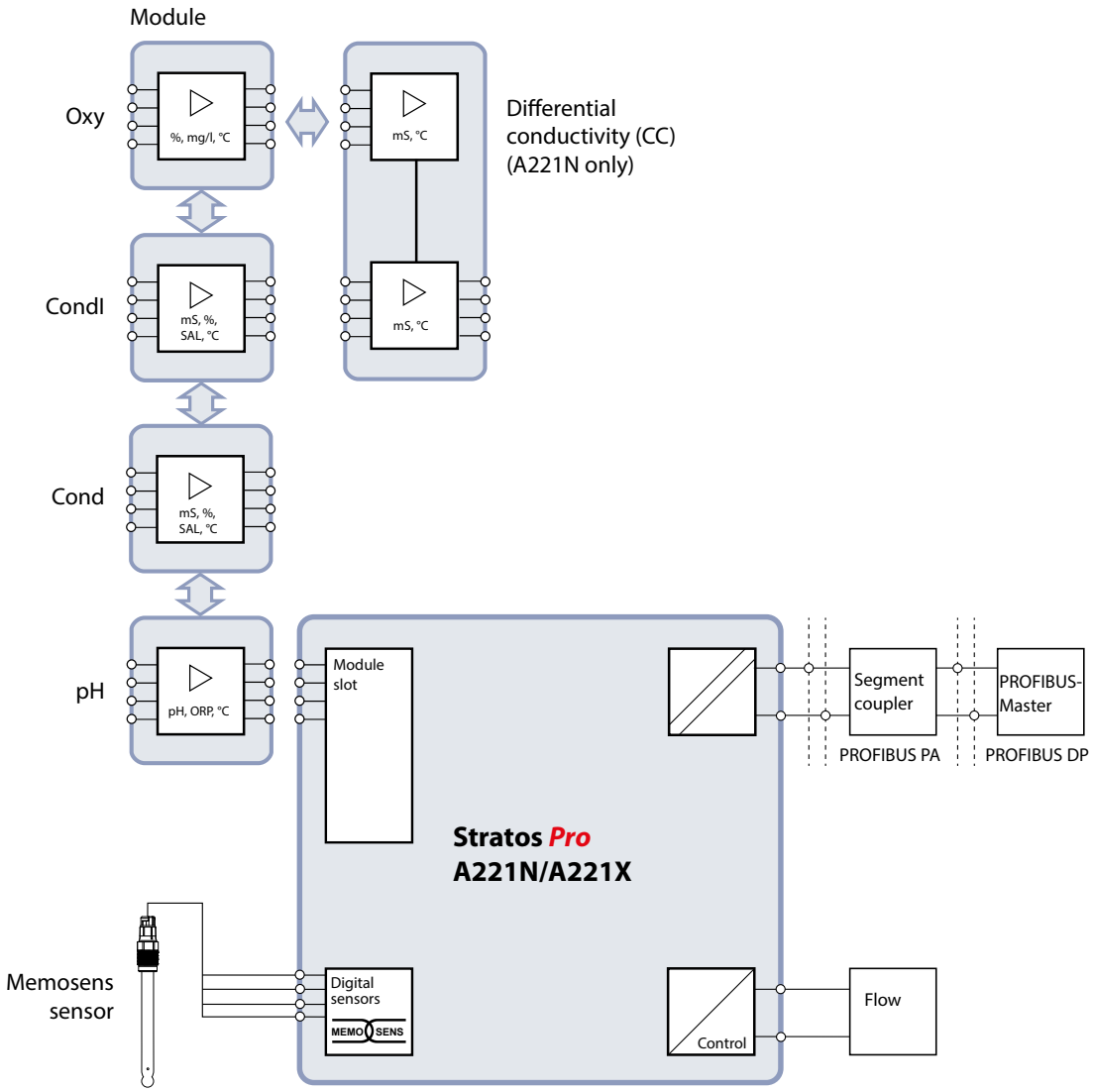
Wiring Example



Specifications	Stratos Pro A221N / A221X	
BUS communication	PROFIBUS PA (DP-V1)	
	Physical interface	Acc. to DIN EN 61158-2 (IEC 61158-2), MBP-IS
	Operating mode	Bus supply with constant current consumption
	Supply voltage	FISCO ≤ 17.5 V
		Linear characteristic ≤ 26 V
		Min. supply voltage 9 V
		Max. supply voltage 32 V (non-Ex)
	Current consumption	< 20 mA
	Max. current in case of fault*)	20.4 mA
Bus connection	3 terminals, pluggable	
Equipotential bonding	1 terminal	

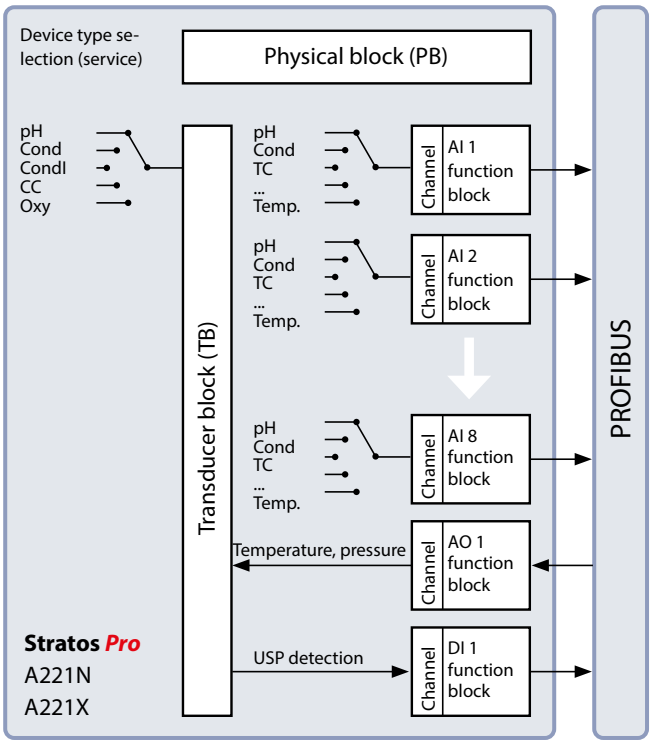
*) Including current increase due to the device's own Fault Disconnection Electronic (FDE)

Wiring Example **PROFIBUS PA**



Block Structure

Stratos Pro A221N / A221X



Function blocks

Overview of data to be transmitted depending on the process variable.*

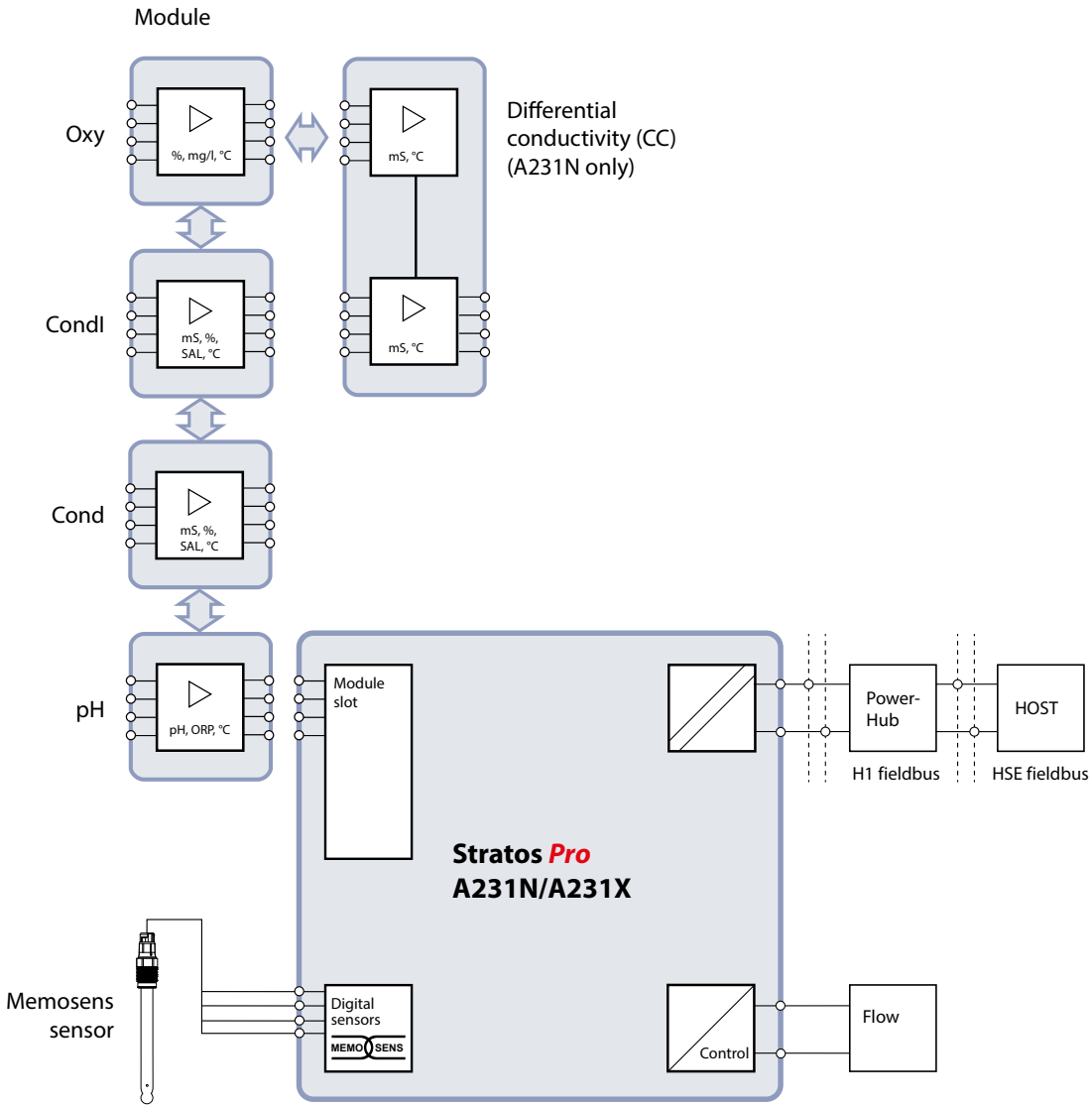
F Block	PH	OXY	COND	CONDI	CC
AI 1	pH value	DO saturation air	Conductivity	Conductivity	Conductivity 1
AI 2	mV value	DO concentration	Resistivity	Resistivity	Conductivity 2
AI 8	Zero point, slope, sensor operating time	Zero point, slope, sensor operating time	Cell constant, sensor operating time	Cell constant, sensor operating time	–
AO 1	Temperature	Pressure	Temperature	Temperature	–
DI 1	–	–	USP	–	–

* Example assignment of process variables

Specifications	**Stratos Pro A231N / A231X**	
BUS communication	FOUNDATION Fieldbus FF-H1	
	Physical interface	Acc. to DIN EN 61158-2 (IEC 61158-2), MBP-IS
	Operating mode	Bus supply with constant current consumption
	Supply voltage	FISCO ≤ 17.5 V
		Linear characteristic ≤ 26 V
		Min. supply voltage 9 V
		Max. supply voltage 32 V (non-Ex)
	Current consumption	< 20 mA
	Max. current in case of fault*)	20.4 mA
Bus connection	3 terminals, pluggable	
Equipotential bonding	1 terminal	

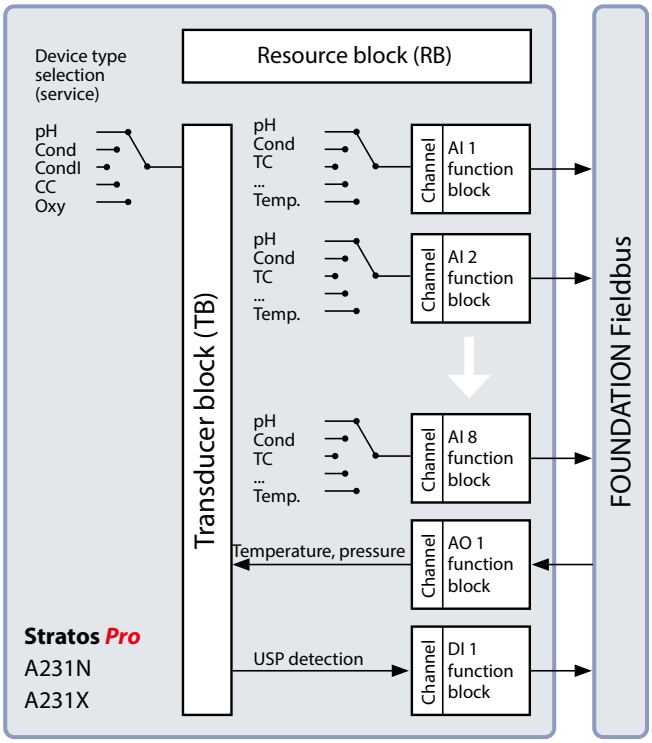
*) Including current increase due to the device's own Fault Disconnection Electronic (FDE)

Wiring Example **FOUNDATION Fieldbus**



Block Structure

Stratos Pro A231N / A231X



Function blocks

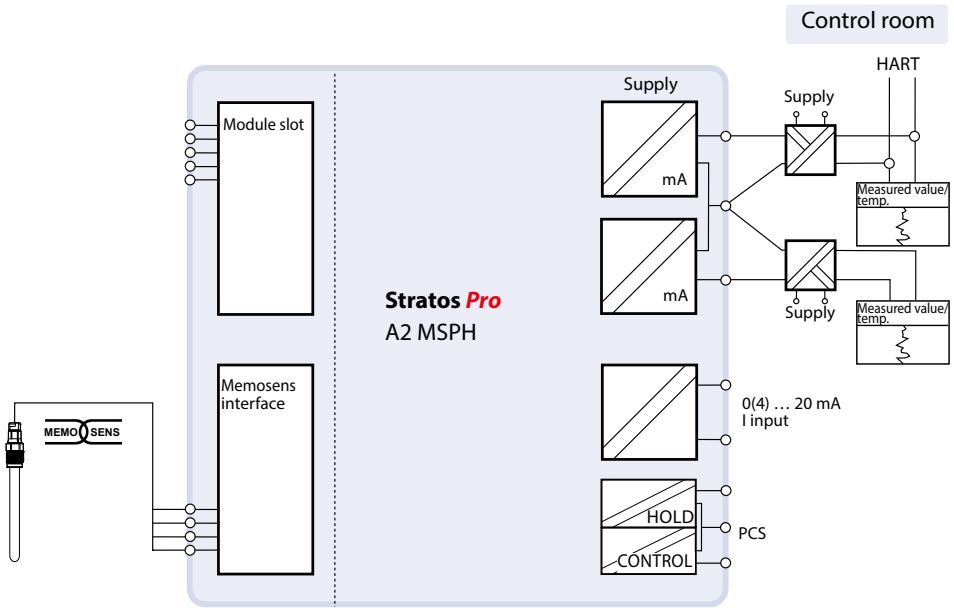
Overview of data to be transmitted depending on the process variable.*

F Block	PH	OXY	COND	CONDI	CC
AI 1	pH value	DO saturation air	Conductivity	Conductivity	Conductivity 1
AI 2	mV value	DO concentration	Resistivity	Resistivity	Conductivity 2
AI 8	Zero point, slope, sensor operating time	Zero point, slope, sensor operating time	Cell constant, sensor operating time	Cell constant, sensor operating time	–
AO 1	Temperature	Pressure	Temperature	Temperature	–
DI 1	–	–	USP	–	–

* Example assignment of process variables

Wiring

Wiring of the Memosens interface for the 2-wire device with a Memosens sensor
Example type: Stratos Pro A201N–MSPH–0



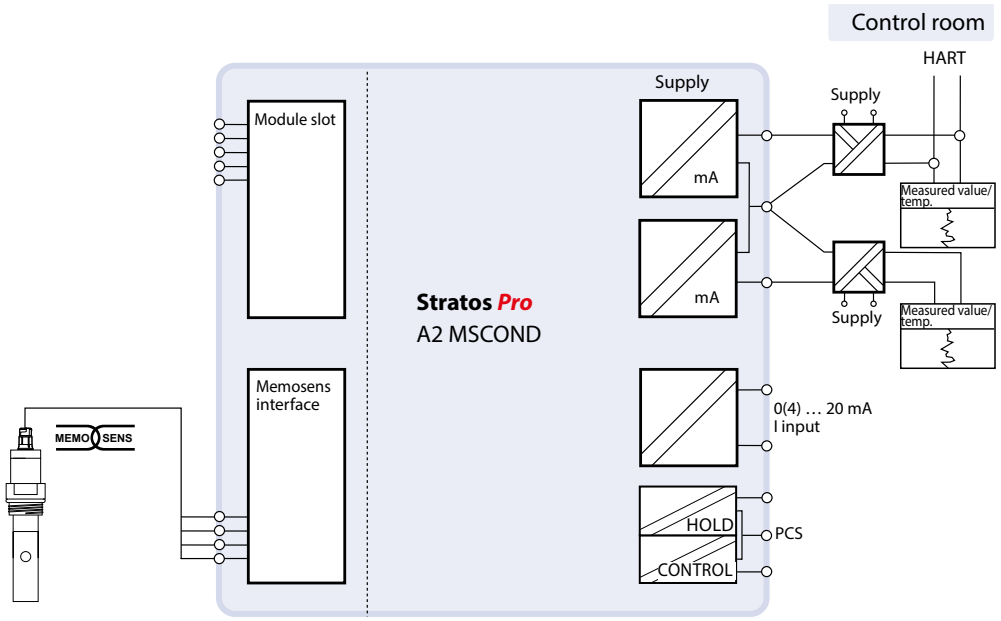
Stratos Pro MSPH

Specifications	Stratos Pro MSPH	
Inputs		
RS485	Digital input for Memosens pH sensors (glass or ISFET) or Memosens ORP sensors	
Display range	pH value:	-2.00 … 16.00
	ORP:	-1999 … 1999 mV
	Temperature:	-20.0 … 200.0 °C (-4.0 … 392.0 °F)
	rH value (with pH/ORP sensor):	0 ... 42.5
Outputs		
Process variable*)	pH, mV value, or temperature	
Characteristic	Linear or bilinear	
Output filter*)	PT1 filter, filter time constant:	0 … 120 s
Sensor adjustment		
Operating modes	– Use of calibration data from digital sensors – Calibration with automatic Calimatic buffer recognition – Manual data entry or with product Buffer sets: Knick, Mettler Toledo, Merck/Riedel de Haen, Ciba (94), NIST, HACH, WTW, Hamilton, Reagecon	
ISFET	Operating point ±200 mV	
ORP calibration range*)	-700 … 700 mV	
Adaptive calibration timer	Interval 0000 … 9999 h	
Temperature compensation		
TC of process medium	Linear:	-19.99 … 19.99 %/K, reference temp. 25 °C
	Table:	0 … 100 °C, user-defined in 5-K steps
Diagnostics/service		
Diagnostic functions	Calibration data, device self test, display test	
Sensocheck	Automatic impedance monitoring of glass electrode	
Sensoface	Information on condition of sensor	(zero point/slope, response time, calibration interval, Sensocheck, wear)
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened	
Service functions	Current source for outputs 1 and 2	
Sensor monitor	Direct display of sensor signals (mV, temperature/ resistance,…)	

*) Adjustable

Wiring

Wiring of the Memosens interface for the 2-wire device with a digital sensor
Example type: Stratos Pro A201N–MSCOND–0



Specifications	Stratos Pro MSCOND		
Inputs			
RS485	Input for Memosens conductivity sensors		
Display ranges*)	Conductivity	0.000 µS/cm … 999.9 mS/cm 0.000 … 99.99 S/m	
	Resistivity	00.00 … 99.99 MOhm × cm	
	Concentration	00.00 … 9.99 %	
	Salinity	0.0 … 45.0 ‰ (0 … 35 °C)	
	Temperature	-20.0 … 150.0 °C (-4.0 … 302.0 °F)	
Temperature compensation*) (reference temperature 25 °C)	Linear 00.00 … 19.99 %/K	(user-defined reference temperature)	
	Natural waters acc. to EN 27888		
	Ultrapure water with traces of NaCl, HCl, or NH_3	(0 ... 120°C)	
Concentration determination	NaCl	0 … 26 wt%	(0 … 100 °C)
	HCl	0 … 18 wt%	(-20 … 50 °C)
	NaOH	0 … 24 wt%	(0 … 100 °C)
	H_2SO_4	0 … 37 wt%	(-17 … 110 °C)
	HNO_3	0 … 30 wt%	(-20 … 50 °C)

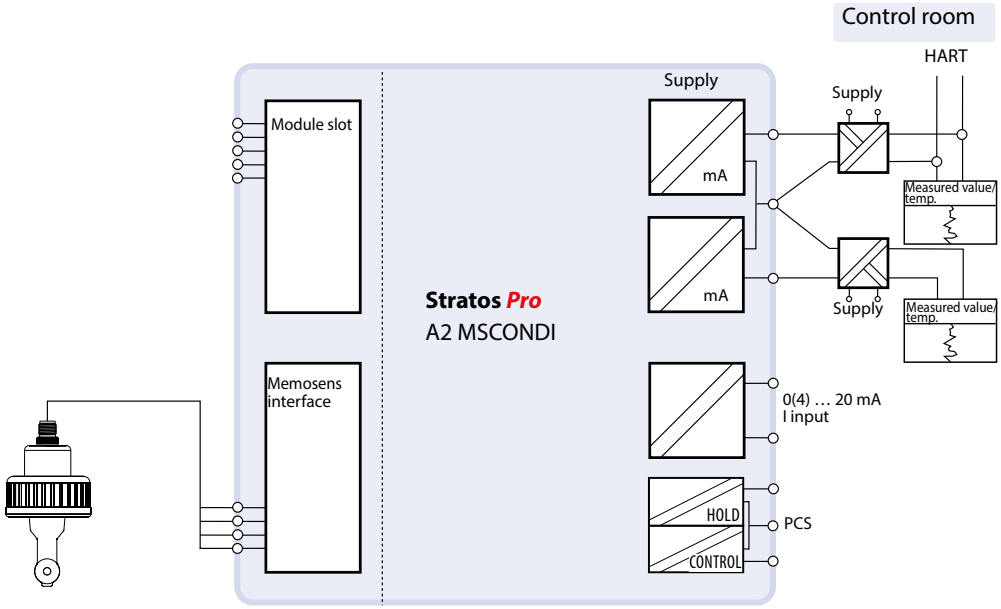
Stratos Pro MSCOND

Specifications	Stratos Pro MSCOND
Outputs	
Process variable*)	Conductivity, resistivity, concentration, salinity, or temperature
Characteristic	Linear, bilinear, or logarithmic
Output filter*)	PT1 filter, filter time constant: 0 … 120 s
USP Function	Water monitoring in the pharmaceutical industry (USP) with additionally specifiable limit (%), output via 22 mA and HART
Sensor adjustment	
Operating modes	– Use of calibration data from digital sensors – Input of cell constant with simultaneous display of selected process variable and temperature – Input of calibration solution conductivity with simultaneous display of cell constants and temperature – Product calibration – Temperature probe adjustment
Diagnostics/service	
Diagnostic functions	Calibration data, device self test, display test
Sensocheck	Polarization detection and monitoring of cable capacitance
Sensoface	Provides information on the condition of the sensor (Sensocheck)
Logbook (TAN)	100 events with date and time
Extended logbook (TAN)	Audit Trail: 200 events with date and time
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened
Service functions	Current source for outputs 1 and 2
Sensor monitor	Direct display of measured values from sensor for resistance/temperature validation

*) Adjustable

Wiring

Wiring of the Memosens interface for the 2-wire device with a digital sensor
Example type: Stratos Pro A201N–MSCONDI–0



Specifications	Stratos Pro MSCONDI	
Inputs		
RS485	Input for SE 670 digital toroidal conductivity sensor or toroidal Memosens conductivity sensors	
Display ranges*)	Conductivity	0.00 … 999.9 mS/cm 0.000 … 99.99 S/m
	Concentration	00.00 … 9.99 %/10.0 … 100.0 %
	Salinity	0.0 … 45.0 ‰ (0 … 35 °C)
Temperature compensation*)	None	
	Linear characteristic 00.00… 19.99 %/K	(user-defined reference temperature)
	Natural waters acc. to EN 27888	(reference temperature 25 °C / 77 °F)
Concentration determination	NaCl	0–26 wt% (0 °C) ... 0–28 wt% (100 °C)
	HCl	0–18 wt% (-20 °C) ... 0-18 wt% (50 °C)
	NaOH	0-13 wt% (0 °C) ... 0-24 wt% (100 °C)
	H_2SO_4	0-26 wt% (-17 °C) ... 0-37 wt% (110 °C)
	HNO_3	0-30 wt% (-20 °C) ... 0-30 wt% (50 °C)
	H_2SO_4	94-99 wt% (-17 °C) ... 89-99 wt% (115 °C)
	HCl	22-39 wt% (-20 °C) ... 22-39 wt% (50 °C)
	HNO_3	35-96 wt% (-20 °C) ... 35-96 wt% (50 °C)
	H_2SO_4	28-88 wt% (-17 °C) ... 39-88 wt% (115 °C)
	NaOH	15-50 wt% (0 °C) ... 35-50 wt% (100 °C)

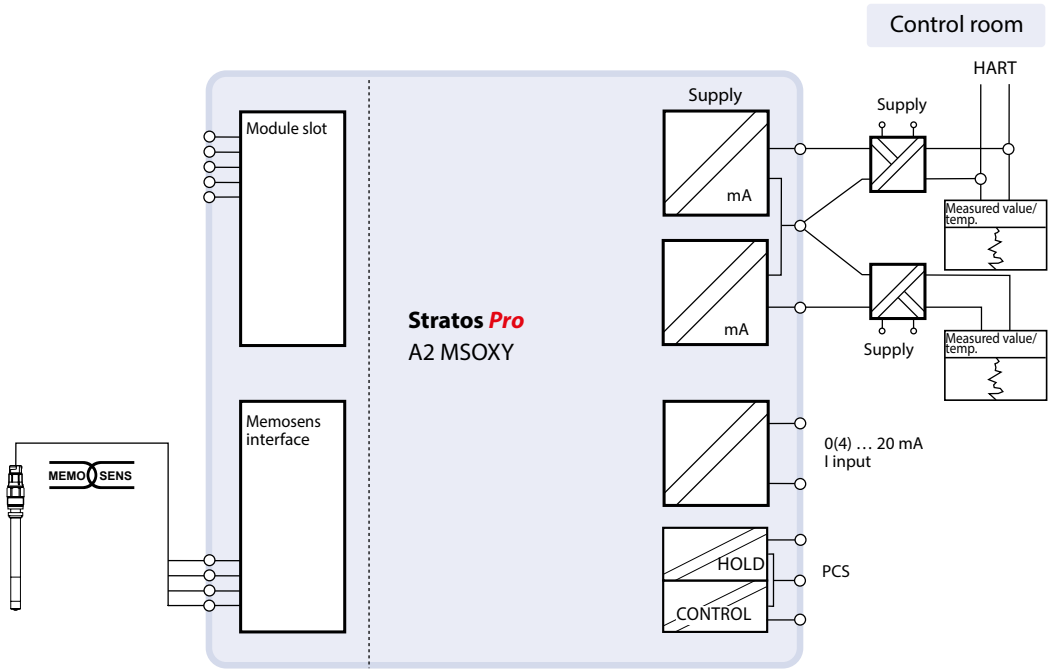
Stratos Pro MSCONDI

Specifications	Stratos Pro MSCONDI
Outputs	
Process variable*)	Conductivity, resistivity, concentration, salinity, or temperature
Characteristic	Linear, bilinear, or logarithmic
Output filter*)	PT1 filter, filter time constant: 0 … 120 s
Sensor adjustment	
Operating modes	– Input of cell factor with simultaneous display of selected process variable and temperature – Input of calibration solution conductivity with simultaneous display of cell factor and temperature – Product calibration – Zero point adjustment – Temperature probe adjustment
Diagnostics/service	
Diagnostic functions	Calibration data, device self test, display test
Sensocheck	Monitoring of primary and secondary coils and lines for open circuit and of primary coil and lines for short circuit Delay: approx. 30 s
Sensoface	Provides information on the condition of the sensor (zero point, Sensocheck)
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened
Service functions	Current source
Sensor monitor	Direct display of measured values from sensor for resistance/temperature validation

*) Adjustable

Wiring

Wiring of the Memosens interface for the 2-wire device with a Memosens sensor
Example type: Stratos Pro A201N–MSOXY–0



Specifications	Stratos Pro MSOXY	
Inputs		
RS485	Digital input for SE706X-NMSN, SE707X-NMSN Memosens oxygen sensors	
Operating modes	Measurement in gases Measurement in liquids	
Display ranges With trace sensors "01" (TAN)	Saturation Concentration Volume concentration in gas	0.0 … 600.0 % 0.00 … 99.99 mg/l (ppm) 0.00 … 99.99 Vol %
Temperature display range	-20.0 … 150.0 °C	(-4.0 … 302.0 °F)
Input correction		
Pressure correction*)	0.000 … 9.999 bar/999.9 kPa/145.0 PSI Manually or via current input 0(4) … 20 mA	
Salinity correction*)	0.0 … 45.0 g/kg	

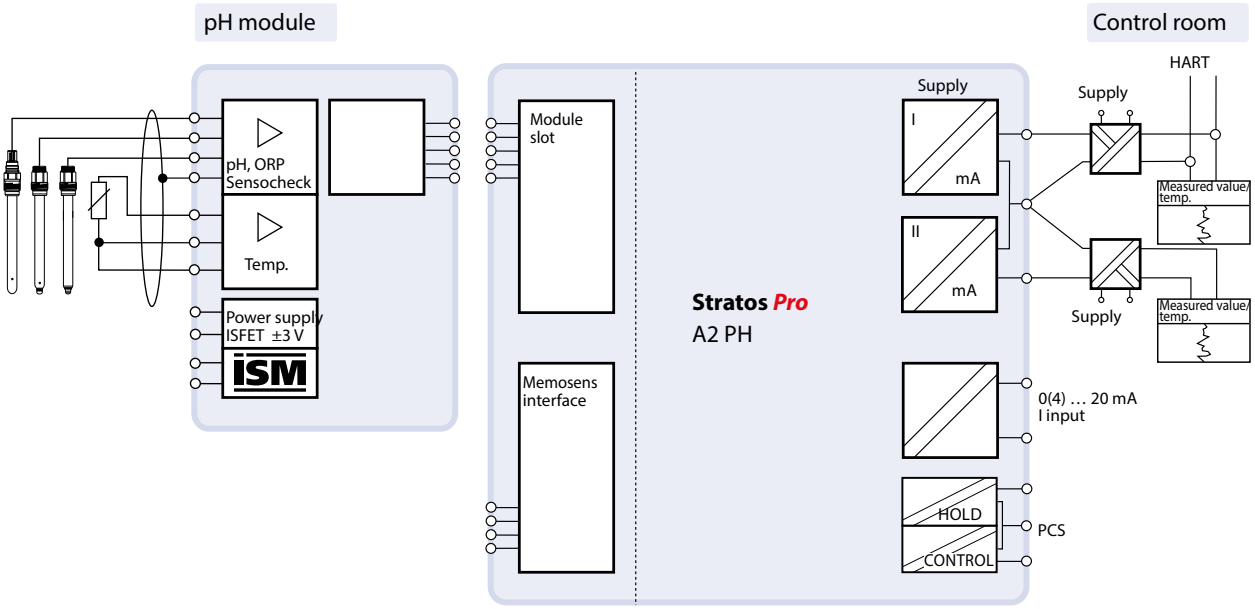
Stratos Pro MSOXY

Specifications	Stratos Pro MSOXY	
Outputs		
Process variable*)	O_2 saturation/O_2 concentration or temperature	
Characteristic	Linear	
Output filter*)	PT1 filter, filter time constant:	0 … 120 s
Sensor adjustment		
Operating modes*)	– Use of calibration data from digital sensors – Automatic calibration in air – Automatic calibration in air-saturated water – Product calibration – Zero calibration	
Calibration range	Standard sensor "10"	
	Zero point	±2 nA
	Slope	25 … 130 nA (at 25 °C, 1013 mbar)
	Trace sensor "01"	
	Zero point	±2 nA
	Slope	200 … 550 nA (at 25 °C, 1013 mbar)
Calibration timer*)	0000 … 9999 h	
Pressure correction*)	Manual 0.000 … 9.999 bar/999.9 kPa/145.0 PSI	
Diagnostics/service		
Diagnostic functions	Calibration data, device self test, display test	
Sensoface	Provides information on the condition of the sensor (zero point/slope, calibration interval, wear)	
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened	
Service functions	Current source	
Sensor monitor	Direct display of sensor signals (sensor current, temperature, current input)	

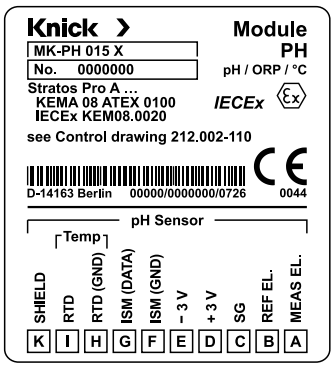
*) Adjustable

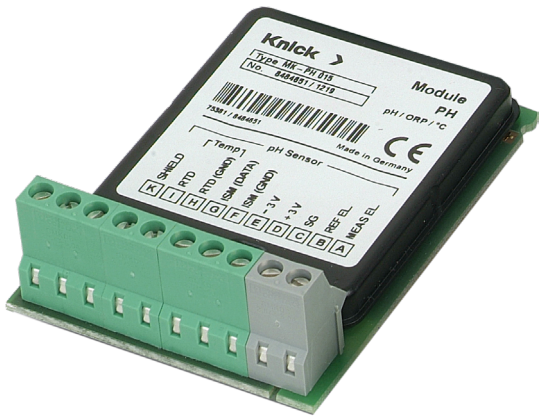
Wiring

Wiring of the pH module with any analog sensors and with ISM and ISFET sensors
Example type: Stratos Pro A201N–PH–0



Stratos Pro MK-PH-015 Module Terminal Assignments





Specifications	Stratos Pro + MK-PH 015	
Inputs		
pH/mV	Input for pH sensors (glass or ISFET) or ORP sensors	
Display range	pH value:	-2.00 … 16.00
	ORP:	-1999 … 1999 mV

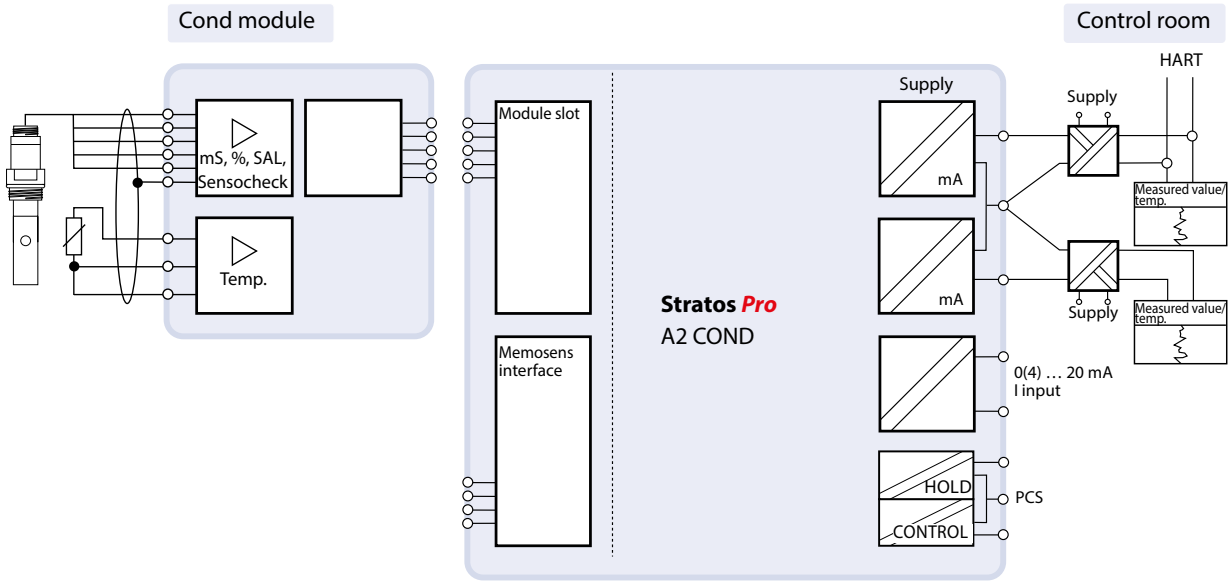
Stratos Pro + MK-PH

Specifications	Stratos Pro + MK-PH 015	
Input correction		
Pressure correction*)	0.000 … 9.999 bar/999.9 kPa/145.0 PSI Manually or via current input 0(4) … 20 mA	
Salinity correction*)	0.0 … 45.0 g/kg	
ISM (TAN)	Interface for operation with ISM (digital sensors)	
Temperature	Pt 100 / Pt 1000 / NTC 30 kOhm	
Temperature display range	-20.0 … 150.0 (200.0) °C	(-4.0 … 302.0 (392.0) °F)
Outputs		
Process variable*)	pH, mV value, or temperature	
Characteristic	Linear or bilinear	
Output filter*)	PT1 filter,	filter time constant: 0 … 120 s
Power supply output	for operating an ISFET adapter	±3 V/0.5 mA
Sensor adjustment		
Operating modes	– Calibration with automatic Calimatic buffer recognition – Manual data entry or with product Buffer sets: Knick, Mettler Toledo, Merck/Riedel de Haen, Ciba (94), NIST, HACH, WTW, Hamilton, Reagecon, user-defined buffer table	
ISFET	Operating point ±200 mV	
ORP calibration range*)	-700 … 700 mV	
Adaptive calibration timer	Interval 0000 … 9999 h	
Temperature compensation		
TC of process medium	Linear: Table:	-19.99 … 19.99 %/K, reference temp. 25 °C 0 … 100 °C, user-defined in 5-K steps
Diagnostics/service		
Diagnostic functions	Calibration data, device self test, display test	
Sensocheck	Automatic impedance monitoring of glass and reference electrode	
Sensoface	Information on condition of sensor (zero point/slope, response time, calibration interval, Sensocheck)	
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened	
Service functions	Current source	
Sensor monitor	Direct display of sensor signals (mV, temperature/resistance, ...)	

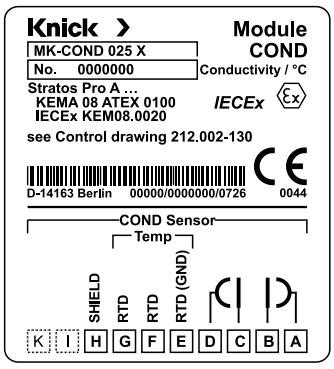
*) Adjustable

Wiring

Wiring of Cond module with 2- or 4-electrode sensors
Example type: Stratos Pro A201N-COND-0



Stratos Pro MK-COND 025 Module Terminal Assignments



Specifications	Stratos Pro + MK-COND 025	
Inputs		
Conductivity	Input for 2-electrode and 4-electrode sensors	
Measuring ranges	2-electrode sensors	0.2 µS × c … 200 mS × c
	4-electrode sensors	0.2 µS × c … 1000 mS × c

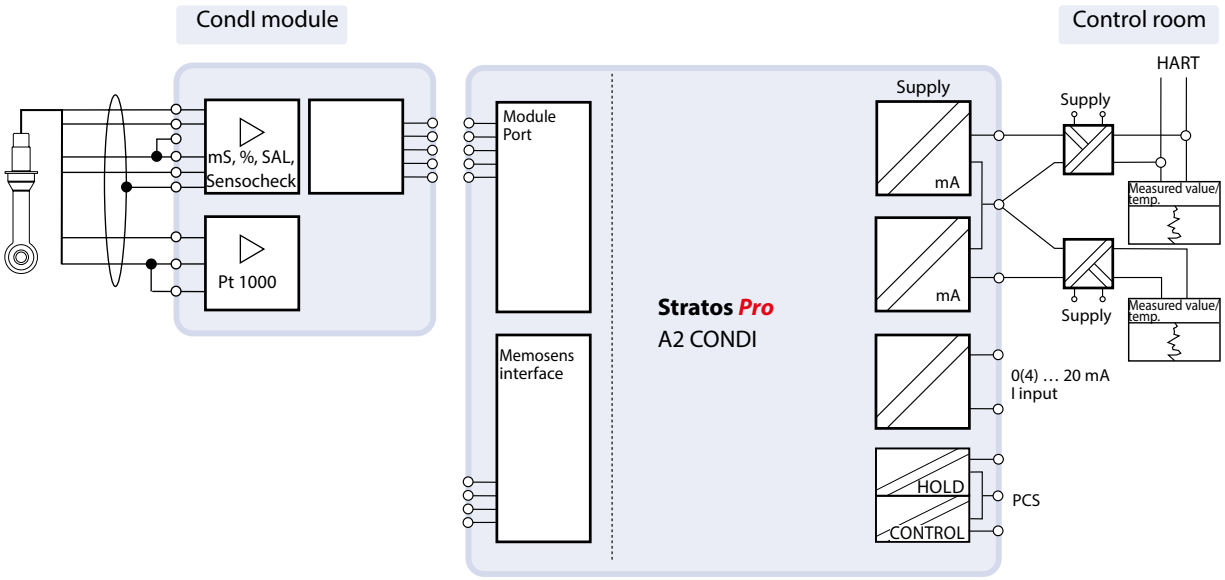
Stratos Pro + MK-COND

Specifications	Stratos Pro + MK-COND 025		
Ranges*)	Conductivity		0.000 µS/cm … 999.9 mS/cm
			0.000 … 99.99 S/m
	Resistivity		00.00 … 99.99 MΩ × cm
	Concentration		00.00 … 9.99 %
	Salinity		0.0 … 45.0 ‰ (0 … 35 °C)
Temperature compensation*)	Linear 00.00 … 19.99 %/K		(user-defined reference temperature)
	Natural waters acc. to EN 27888		(reference temperature 25 °C)
	Ultrapure water with traces of NaCl, HCl, or NH_3		(0 … 120 °C)
Concentration determination	NaCl	0 … 28 wt%	(0 … 100 °C)
	HCl	0 … 18 wt%	(-20 … 50 °C)
	NaOH	0 … 24 wt%	(0 … 100 °C)
	H_2SO_4	0 … 37 wt%	(-17 … 110 °C)
	HNO_3	0 … 30 wt%	(-20 … 50 °C)
Temperature input	Pt 100 / Pt 1000 / NTC 30 kΩ / NTC 8.55 kΩ (Betatherm) / Ni 100		
Measuring range	Pt:	-50.0 … 250.0 °C	(-58.0 … 482.0 °F)
	NTC 30 kΩ:	-20.0 … 150.0 °C	(-4.0 … 302.0 °F)
	Ni 100:	-50.0 … 180.0 °C	(-58.0 … 356.0 °F)
Outputs			
Process variable*)	Conductivity, resistivity, concentration, salinity, or temperature		
Characteristic	Linear, bilinear, or logarithmic		
Output filter*)	PT1 filter,		filter time constant: 0 … 120 s
USP Function	Water monitoring in the pharmaceutical industry (USP) with additionally specifiable limit (%), output via 22 mA and HART (TAN)		
Sensor adjustment			
Operating modes	– Input of cell constant with simultaneous display of selected process variable and temperature – Input of calibration solution conductivity with simultaneous display of cell constants and temperature – Product calibration – Temperature probe adjustment		
Diagnostics/service			
Diagnostic functions	Calibration data, device self test, display test		
Sensocheck	Polarization detection and monitoring of cable capacitance		
Sensoface	Provides information on the condition of the sensor, Sensocheck		
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened		
Service functions	Current source		
Sensor monitor	Direct display of measured values from sensor for resistance/temperature validation		

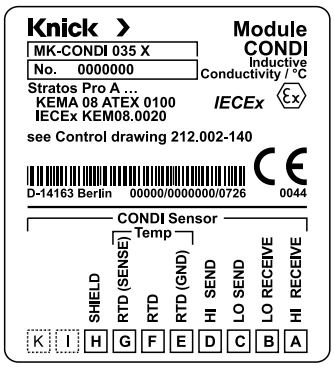
*) Adjustable

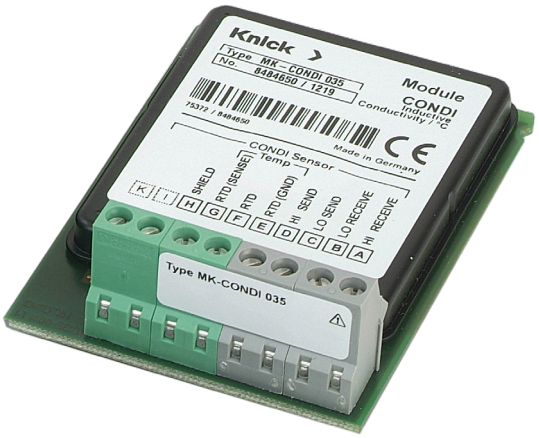
Wiring

Wiring of CondI module with toroidal sensors
Example type: Stratos Pro A201N–CONDI–0



Stratos Pro MK-CONDI 035 Module Terminal Assignments





Specifications	Stratos Pro + MK-CONDI 035	
Inputs		
Conductivity	Input for toroidal conductivity sensors	
Measuring ranges	Conductivity	0.000 … 1999 mS/cm
	Concentration	0.00 … 100.0 Gew%
	Salinity	0.0 … 45.0 ‰
Temperature compensation*)	Linear 00.00 … 19.99 %/K	(user-defined reference temperature)
	NaCl from 0 to 26 wt%	(0 … 120°C)
	Natural waters acc. to EN 27888	(reference temperature 25 °C)

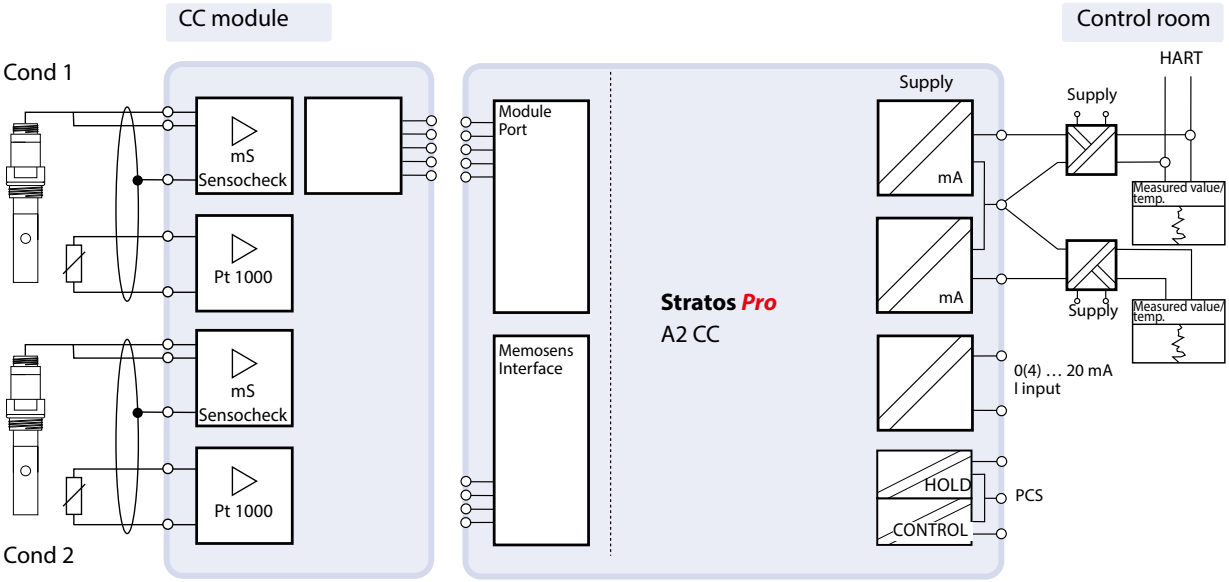
Stratos Pro + MK-CONDI

Specifications	Stratos Pro + MK-CONDI 035	
Concentration determination	NaCl	0-26 wt% (0 °C) ... 0–28 wt% (100 °C)
	HCl	0–18 wt% (-20 °C) ... 0-18 wt% (50 °C)
	NaOH	0-13 wt% (0 °C) ... 0-24 wt% (100 °C)
	H_2SO_4	0-26 wt% (-17 °C) ... 0-37 wt% (110 °C)
	HNO_3	0-30 wt% (-20 °C) ... 0-30 wt% (50 °C)
	H_2SO_4	94-99 wt% (-17 °C) ... 89-99 wt% (115 °C)
	HCl	22-39 wt% (-20 °C) ... 22-39 wt% (50 °C)
	HNO_3	35-96 wt% (-20 °C) ... 35-96 wt% (50 °C)
	H_2SO_4	28-88 wt% (-17 °C) ... 39-88 wt% (115 °C)
	NaOH	15-50 wt% (0 °C) ... 35-50 wt% (100 °C)
Temperature	Pt 100 / Pt 1000 / NTC 30kΩ	
Measuring range	Pt: -50.0 … 250.0 °C	(-58.0 … 482.0 °F)
	NTC 30kΩ: -20.0 … 150.0 °C	(-4.0 … 302.0 °F)
Outputs		
Process variable*)	Conductivity, concentration, salinity, or temperature	
Characteristic	Linear, bilinear, or logarithmic	
Output filter*)	PT1 filter,	filter time constant: 0 … 120 s
Sensor adjustment		
Operating modes	– Input of cell factor with simultaneous display of selected process variable and temperature – Input of calibration solution conductivity with simultaneous display of cell factor and temperature – Product calibration – Zero point adjustment – Temperature probe adjustment	
	Perm. cell factor	0.100 … 19.999 cm^{-1}
	Permissible transfer ratio	1.00 … 199.99
	Perm. zero offset	±0.5 mS
Diagnostics/service		
Diagnostic functions	Calibration data, device self test, display test	
Sensocheck	Monitoring of primary and secondary coils and wires for interruption and short circuit	
Sensoface	Provides information on the condition of the sensor, Sensocheck	
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened	
Service functions	Current source	
Sensor monitor	Direct display of sensor signals (resistance/temperature)	

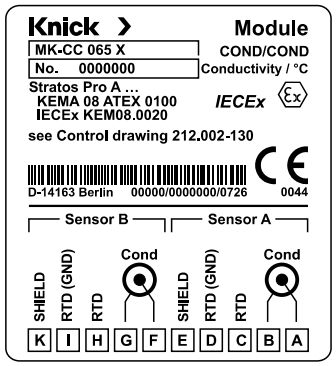
*) Adjustable

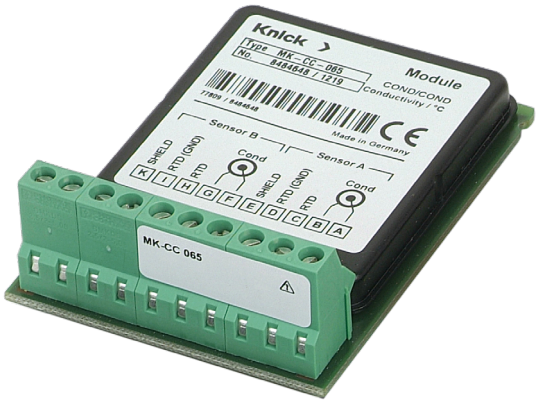
Wiring

Wiring of CC module with 2x 2-electrode sensors
Example type: Stratos Pro A201N-CC-0



Stratos Pro MK-CC 065 Module Terminal Assignments





Specifications	Stratos Pro + MK-CC 065	
Inputs		
Conductivity	2 inputs for 2-electrode sensors	
Measuring range	0 … 30000 µS × c	
Display range*)	Conductivity	0.000 ... 9.999 µS/cm 00.00 ... 99.99 µS/cm 000.0 ... 999.9 µS/cm 0000 ... 9999 µS/cm
	Resistivity	00.00 ... 99.99 MΩ × cm

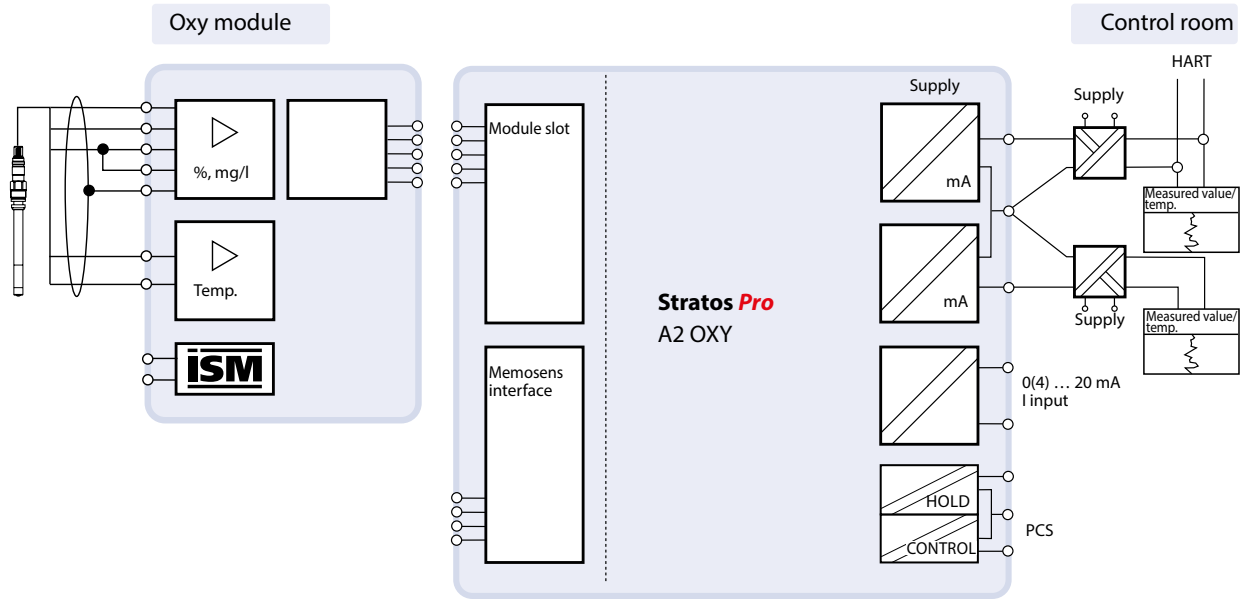
Stratos Pro + MK-CC

Specifications	Stratos Pro + MK-CC 065		
Temperature compensation*)	Linear 00.00 … 19.99 %/K		(user-defined reference temperature)
	Natural waters acc. to EN 27888		(reference temp. 25 °C)
	Ultrapure water with traces of NaCl, HCl, or NH_3		(0 … 120 °C)
Calculations (CALC)	–C1–	Difference	A – B [µS/cm]
	–C2–	Ratio	A / B 00.00 … 19.99
	–C3–	Passage	B / A × 100 000.0 … 199.9 %
	–C4–	Rejection	(A – B) / A × 100 -199.9 … 199.9 %
	–C5–	Deviation	(B – A) / A × 100 -199.9 … 199.9 %
	–C6–	pH value	Acc. to Directive VGB S-006 [pH]
	–C7–	pH value	Variable, user-defined factors [pH]
	–C8–	USER SPEC	DAC (degassed acid conductivity) [µS/cm]
	–C9–	ALCALISING	Concentration of alkalizing agent (VGB S-006)
Temperature	Pt 1000 2-wire connection, adjustable		
Measuring range	-50.0 … 200.0 °C		(-58.0 … 392.0 °F)
Outputs			
Process variable*)	Conductivity, resistivity, temperature, or CALC		
Characteristic	Linear		
Output filter*)	PT1 filter,		filter time constant: 0 … 120 s
Sensor adjustment			
Channel A/B	Input of cell constant with simultaneous display of selected process variable and temperature		
Permissible cell constant	0.0050 … 1.9999 cm^{-1}		
Diagnostics/service			
Diagnostic functions	Calibration data, device self test, display test		
Sensocheck	Polarization detection and monitoring of cable capacitance Delay: approx. 30 s		
Sensoface	Provides information on the condition of the sensor, Sensocheck, flow monitoring		
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened		
Service functions	Current source for outputs 1 and 2 (3.80 … 22.00 mA)		
Sensor monitor	Direct display of measured values from sensor for resistance/temperature validation		

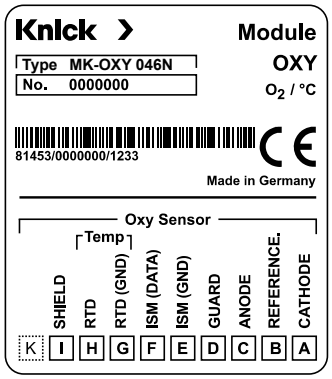
*) Adjustable

Wiring

Wiring of Oxy module with SE 706 oxygen sensors, Mettler Toledo InPro 6800, Hamilton Oxyferm
Example type: Stratos Pro A201N–OXY–0



Stratos Pro MK-OXY 046 Module Terminal Assignments



Specifications	Stratos Pro + MK-OXY 046	
O_2 standard	SE703, SE706/707 sensors (Mettler Toledo InPro 6800, Hamilton Oxyferm)	
O_2 trace measurement (TAN)	SE706/707 sensors, Mettler Toledo InPro 6800/6900/6950, and Hamilton Oxyferm/ Oxygold	
Operating modes	Measurement in gases	Measurement in liquids
Input ranges*)		
Polarization voltage	0 … -1000 mV,	Preset -675 mV (resolution < 5 mV)
Measuring current	-600 (-10000) … 2 nA, Permissible guard current	resolution 10 pA (166 pA) ≤ 20 µA

Stratos Pro + MK-OXY

Specifications	Stratos Pro + MK-OXY 046	
Display ranges With standard sensors "10"	Saturation Concentration Volume concentration in gas	0.0 … 600.0 % 0.00 … 99.99 mg/l (ppm) 0.00 … 99.99 Vol %
Display ranges With trace sensors "01"	Saturation Concentration Volume concentration in gas	0.000 … 150.0 % 0 … 9999 µg/l (ppb)/10.00 … 20.00 mg/l (ppm) 0 … 9999 ppm (Vol)/1.000 … 50.00 Vol %
Display ranges With sub-trace sensors "001"	Saturation Concentration Volume concentration in gas	0.000 … 150.0 % 0.0 … 9999 µg/l (ppb)/10.00 … 20.00 mg/l (ppm) 0.0 … 9999 ppm (Vol)/1.000 … 50.00 Vol %
Input correction		
Pressure correction*)	0.000 … 9.999 bar/999.9 kPa/145.0 PSI Manually or via current input 0(4) … 20 mA	
Salinity correction*)	0.0 … 45.0 g/kg	
ISM (TAN)	Interface for operation with ISM (digital sensors)	
Temperature	NTC 22 kΩ/NTC 30 kΩ Display range	 -20.0 … 150.0 °C (-4.0 … 302.0 °F)
Outputs		
Process variable*)	O_2 saturation/O_2 concentration or temperature	
Characteristic	Linear	
Output filter*)	PT1 filter,	filter time constant: 0 … 120 s
Sensor adjustment		
Operating modes*)	– Use of calibration data from digital sensors – Automatic calibration in air – Automatic calibration in air-saturated water – Product calibration – Zero calibration	
Calibration range Standard sensor "10"	Zero point Slope	±2 nA 25 … 130 nA (at 25 °C, 1013 mbar)
Calibration range Trace sensor "01"	Zero point Slope	±2 nA 200 … 550 nA (at 25 °C, 1013 mbar)
Calibration range Sub-trace sensor "001"	Zero point Slope	±3 nA 2000 … 9000 nA (at 25 °C, 1013 mbar)
Calibration timer*)	0000 … 9999 h	
Pressure correction*)	Manual 0.000 … 9.999 bar/999.9 kPa/145.0 PSI	
Diagnostics/service		
Diagnostic functions	Calibration data, device self test, display test	
Sensoface	Provides information on the condition of the sensor (zero point/slope, calibration interval, wear)	
FDA CFR 21 Part 11	– Access control via editable passcodes – Logbook entry and flag via HART in event of configuration changes – Message and logbook entry when housing is opened	
Service functions	Current source	
Sensor monitor	Direct display of sensor signals (sensor current, temperature, current input)	

*) Adjustable

Easy Installation

- Wall-, pipe-, or panel-mount installation
- All parts are easily accessible
- Large terminal compartment
- Rear unit can be pre-installed
- Also suitable for rigid metallic conduits
- Replaceable plug-in terminals
- Replacement of electronics without new cabling

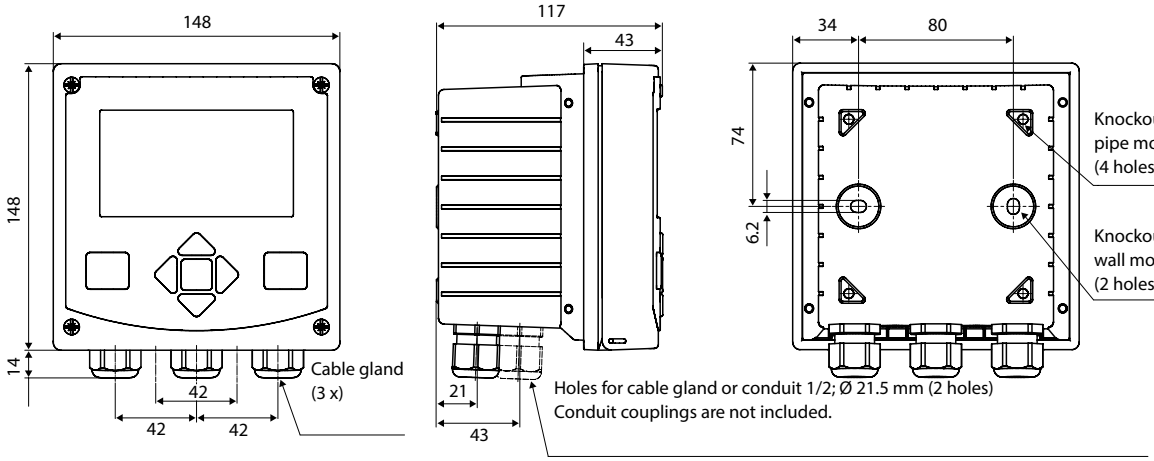
ZU 0274 Pipe-Mount Kit
For mounting on vertical or horizontal posts or pipes.

ZU 0737 Protective Hood
Additional protection from direct weather exposure and mechanical damage.

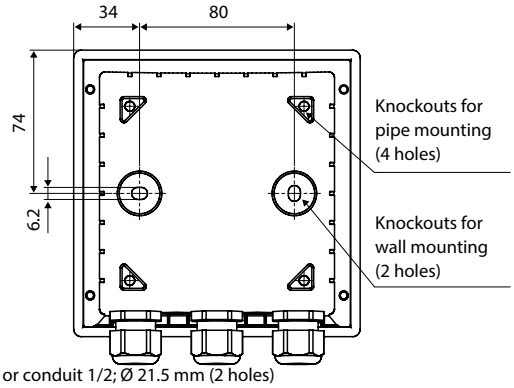
ZU 0738 Panel-Mount Kit
For installation in standardized panel cutout 138 x 138 mm (DIN 43700), sealed against panel.

Dimension drawings

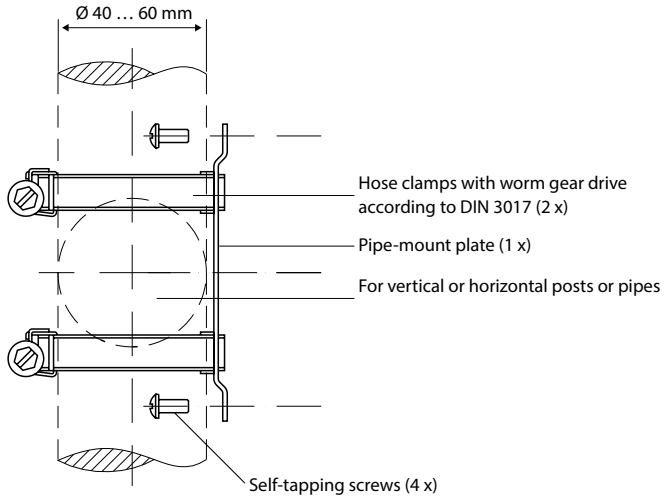
Front and Side View



Rear View

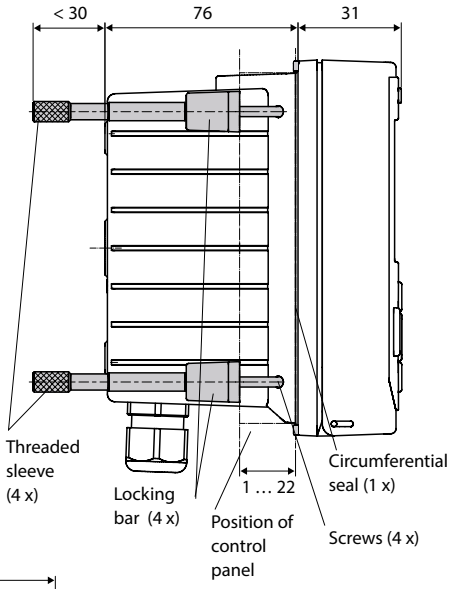


ZU 0274 Pipe-Mount Kit



ZU 0738 Panel-Mount Kit

Panel cutout 138 x 138 mm (IEC 61554)



ZU 0737 Protective Hood